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PROCESS FOR THE TREATMENT OF TRANSFER PRINTED PAPER AND THE PRINTED PAPER THUS OBTAINED

The present invention relates to a treatment process of transfer printed paper and the transfer printed paper thus obtained.

A sublimatic printing process whereby it is possible to print polyester fabrics with excellent results, has been known and widely used for some time. Specific printed paper with sublimatic colours, called " transfer printed paper" is used, which when put in close contact in a hot calender with polyester fabrics, accurately releases the colours present on the paper onto the fabric, thus allowing the exact print present on the paper to be repeated.

This paper is based on the sublimation principle of the dye which is absorbed by the fibre of polyester fabric.

This printing system is currently only used for polyester fabrics, as other textile fibres, due to their

incapacity to absorb dispersed or plasto-soluble dyes used in transfer printed paper, cannot be printed.

Polyamide fibres (nylon) are capable of only partially receiving dyes and can therefore only be used in a minimum percentage.

It is impossible, on the other hand, to effect the colouring of cellulose fibres with this technique.

Sublimatic printing processes are extremely ecological printing processes, which are easy to apply without costly equipment and particular design precision. For these reasons they have obtained great commercial success in the last few years.

It has been estimated in fact that in Europe alone, about 500 million m^2 of polyester fabric are printed with this system called "Sublimatic Transfer Printing".

Various studies and attempts have therefore been effected to try and discover how to use the sublimatic process and specific transfer printed paper in the printing of vegetable fibres such as cotton, linen, etc.

Attempts have been made, for example, to treat cotton with special polymers or using various dyes in paper printing, but so far there has been no success in obtaining a printing process and cotton, or vegetable fibre in general, with interesting qualitative and commercial characteristics.

The objective of the present invention is to identify a treatment of paper already printed with sublimatic colours, i.e. of transfer printed paper, which makes it suitable for the sublimatic printing of vegetable fibres (cellulose) and mixed fibres, consequently overcoming the limits which characterize the known art.

An object of the present invention therefore relates to an application process of a polymeric carrier consisting of at least one thermoplastic polymer based on polyester or copolyester to sublimatic transfer printed paper.

A further object of the present invention relates to sublimatic transfer printed paper to which a polymeric carrier consisting of at least one thermoplastic polymer based on polyester or copolyester, has been applied.

The fundamental advantage of the process according to the present invention lies in the fact that it makes it possible to use, in the printing of vegetable fibres, existing technologies and paper currently adopted for the printing of polyester fabrics.

In particular, the application process of a polymeric carrier consisting of at least one thermoplastic polymer based on polyester or copolyester to sublimatic transfer printed paper, can be effected by melting, coupling, coating or sintering.

Application by the melting of the polymeric carrier to the sublimatic transfer printed paper can be carried out by means of bubble extrusion, in a flat head or in a calender.

Application by the coupling of the polymeric carrier to the sublimatic transfer printed paper can be carried out by the coupling of a previously formed film.

Application by the coating of the polymeric carrier to the sublimatic transfer printed paper can be carried out by means of the rotogravure, roll revers, etc. of solutions of said polymeric carrier.

As indicated above, the dyes printed on the transfer paper belong to the chemical class of dyes called dispersed or plasto-soluble dyes.

The polymeric carrier consists of polyester and copolyester thermoplastic polymers.

In particular, the polymeric carrier consists of polyester and copolyester thermoplastic polymers having a melting point ranging from 80 to 150°C. The melting points preferably range from 110 to 130°C.

The polyester and copolyester thermoplastic polymers are preferably obtained by the reaction of aromatic and/or aliphatic dicarboxylic acids with aliphatic and/or cyclic bifunctional glycols.

The aromatic and/or aliphatic dicarboxylic acids are

preferably selected from isophthalic acid, terephthalic acid, their anhydrides and/or their esters, phthalic anhydride, sebacic acid, azaleic acid, adipic acid, etc.

In particular, the esters are preferably methyl esters.

The aliphatic and/or cyclic bifunctional glycols are preferably selected from butanediol, ethanediol, propanediol, hexanediol, neopentylglycol and polyols such as polypropyleneglycol and polytetramethyleneglycol, etc.

In particular, polypropyleneglycol has a molecular weight ranging from 500 to 1000 and polytetramethyleneglycol has a molecular weight ranging from 1000 to 2000.

The process according to the present invention consequently allows printed dyes to be transferred onto transfer printed paper, vegetable and mixed fibres under the same conditions adopted for the normal sublimatic printing of polyester fibres.

An object of the present invention also relates to the use of the transfer printed paper obtainable with the process according to the present invention, for the sublimatic printing of fabrics and/or vegetable and/or mixed fibres, in particular cotton or linen fabrics and/or fibres.

The present invention also relates to a fabric or

vegetable and/or mixed fibre, printed by means of a sublimatic printing process with the transfer printed paper obtainable with the process according to the present invention.

The characteristics and advantages of the process and transfer printed paper according to the present invention, can be better understood from the following detailed and illustrative description, referring to the following examples.

EXAMPLE 1

15.5 kg of dimethylterephthalate, 15.5 kg of dimethylisophthalate, 41.4 kg of 1,4-butanediol and 0.125 kg of catalyst were charged into a reactor.

The mixture was then stirred and heated, by means of thermal oil exchangers, to a temperature of 245°C for an hour and a half. After distilling the methanol formed, 8.14 kg of sebacic acid were added. The reaction was then put under vacuum at a pressure of 120 mmHg and left to react for a further hour. The pressure was subsequently further reduced to 1 mmHg and the mixture was brought to 260°C for two hours.

After distilling the water from the reactor, the non-reacted 1,4-butanediol and possible tetrahydrofuran formed by cyclization of the 1,4-butandediol, a polymer is obtained, having an intrinsic viscosity equal to 0.735

and a crystalline melting point equal to 110°C.

EXAMPLE 2

The same procedure is adopted as described in Example 1 with the only difference that the sebacic acid is substituted with 7.8 kg of azaleic acid.

The polymer thus obtained has an intrinsic viscosity equal to 0.715 and a crystalline melting point equal to 108°C.

The polymers obtained according to one of the above examples are then reduced to granules and applied to the paper by means of the equipment and processes previously indicated, thus allowing sublimatic prints to be effected on vegetable and mixed fibres which otherwise could not be printed with this technique.